Montana Comprehensive Assessment System (MontCAS, Phase 2)

Criterion-Referenced Test (CRT)

Common Constructed-Response Item Release
Mathematics, Grade 7

2007

OPI

OFFICE OF PUBLIC INSTRUCTION

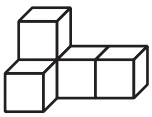
For information, contact Measured Progress, P.O. Box 1217, Dover, NH 03821-1217.
Printed in the United States of America.

Mathematics

Session 1 (Calculator)

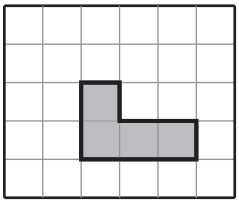
You may use a calculator during this session.

25. Martin built the structure shown below with five cubes.



Front

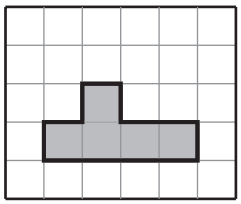
The front view of his structure is shown below.



Martin's Front View

a. On the grid in your Student Response Booklet, draw the top view of Martin's five-cube structure. Label your drawing part a.

Linda built a different structure with six cubes. The front view of her structure is shown below.

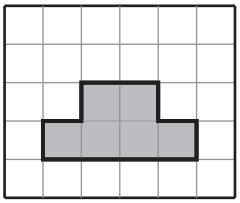


Linda's Front View

b. On the grid in your Student Response Booklet, draw one possible top view of Linda's six-cube structure. Label your drawing part b.

c. On the grid in your Student Response Booklet, draw the view from the right or left side of the six-cube structure. Label your drawing part c.

James thinks this could be a top view of Linda's structure.



James's Top View

d. Explain why James's top view is not possible for Linda's six-cube structure.

Scoring Guide

Score	Description
4	4 points
3	3 points
2	2 points
1	1 point
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Scoring Notes

Part a: 1 point for correctly drawing a top view

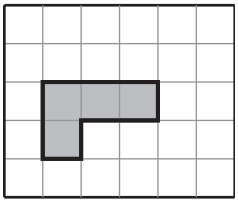
Part b: 1 point for correctly drawing a top view

Part c: 1 point for correctly drawing a side view

Part d: 1 point for correctly explaining why James's view is not possible

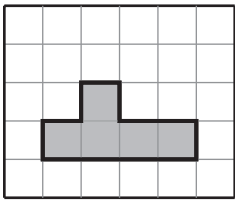
Sample Response:

Part a:

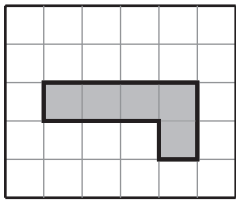


Part A

Part b: There are 8 possibilities. They may be horizontal or vertical. The vertical examples are:

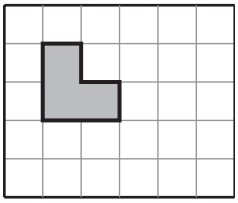


Part B



Part B

Part c:



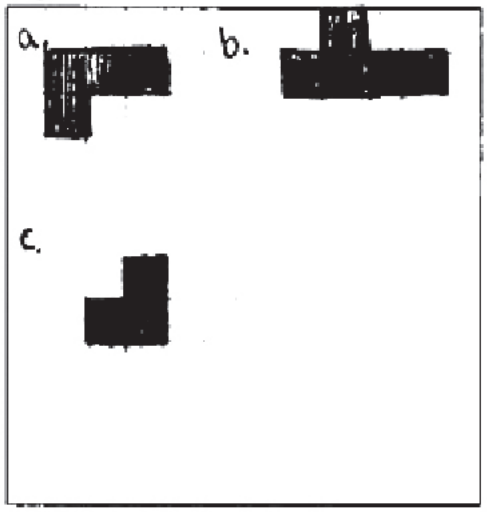
Part C

Part d: There is a total of 6 blocks. In James's top view all six blocks are on the bottom layer. This is not possible since from the front view there are two blocks on top of each other. The most blocks that can be on the bottom layer is five blocks.

Score Point 4

Sample 1

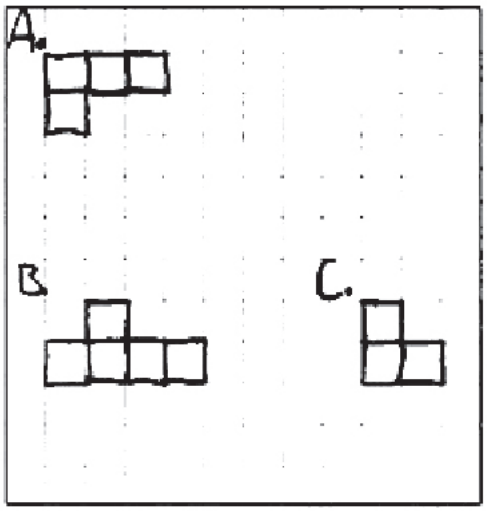
d. Jame's top view is not possible for Linda's six cube structure because in his top view, you can see all six cubes. From a top view you cannot see cubes stacked on top of each other, and Linda's structure has one stacked on top of the others. If Jame's top view was correct, Linda's structure would have seven cubes.



Score Point 4

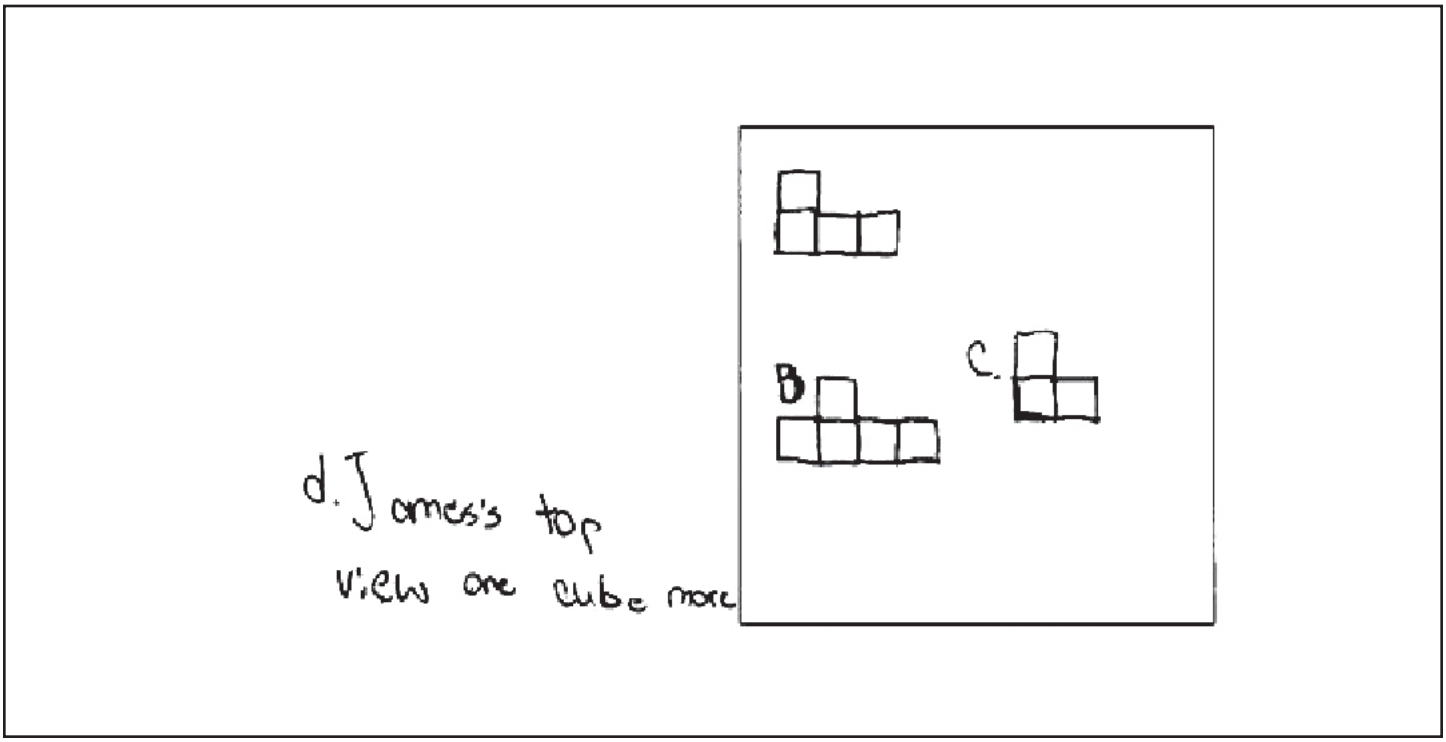
Sample 2

D. James's top view isn't possible for the structure because Linda's front view has 1 cube on top of another. Therefore his doesn't work because he has none stacked, but all laying next to each other.



Score Point 3

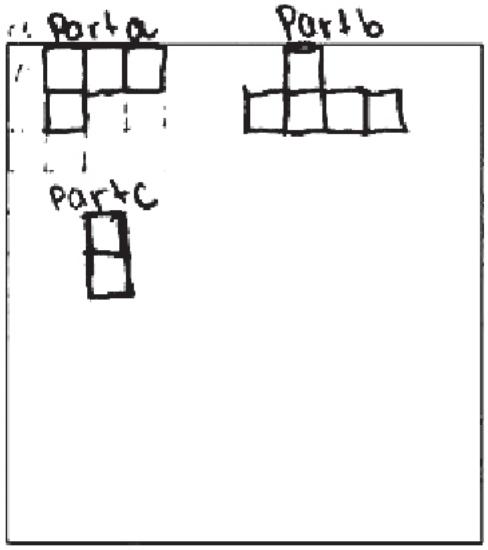
Sample 1



Score Point 3

Sample 2

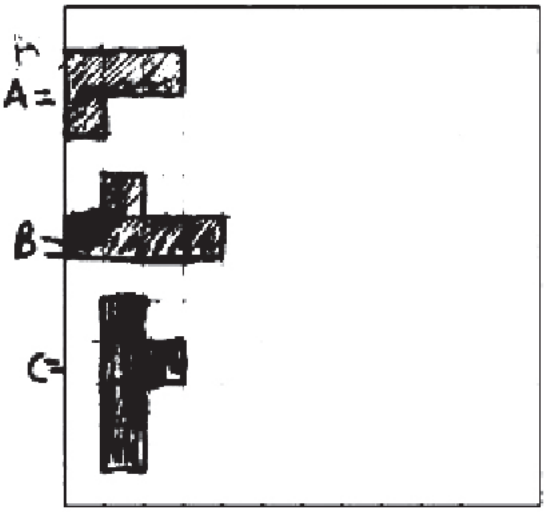
① James's views not possible because Linda has a cube on top of her structure. James view shows six cubes lying on the ground. If her top view was like that she would have seven cubes instead of six.



Score Point 2

Sample 1

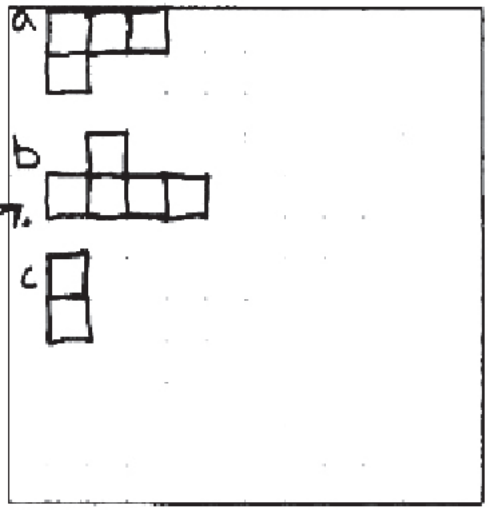
D=Because one is stacked up in Linda's, and in James They are not stacked up.



Score Point 2

Sample 2

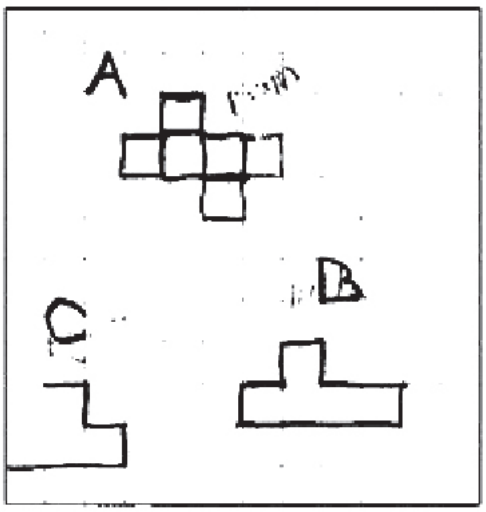
Because James's is six cubes exactly in line from top view. But Lindas top view could look like



Score Point 1

Sample 1

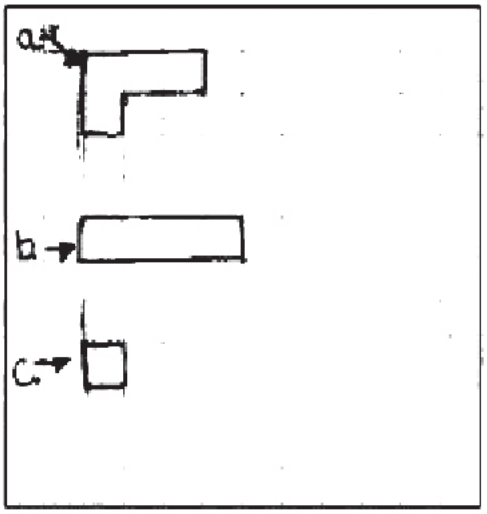
because top is an angle not a structure!



Score Point 1

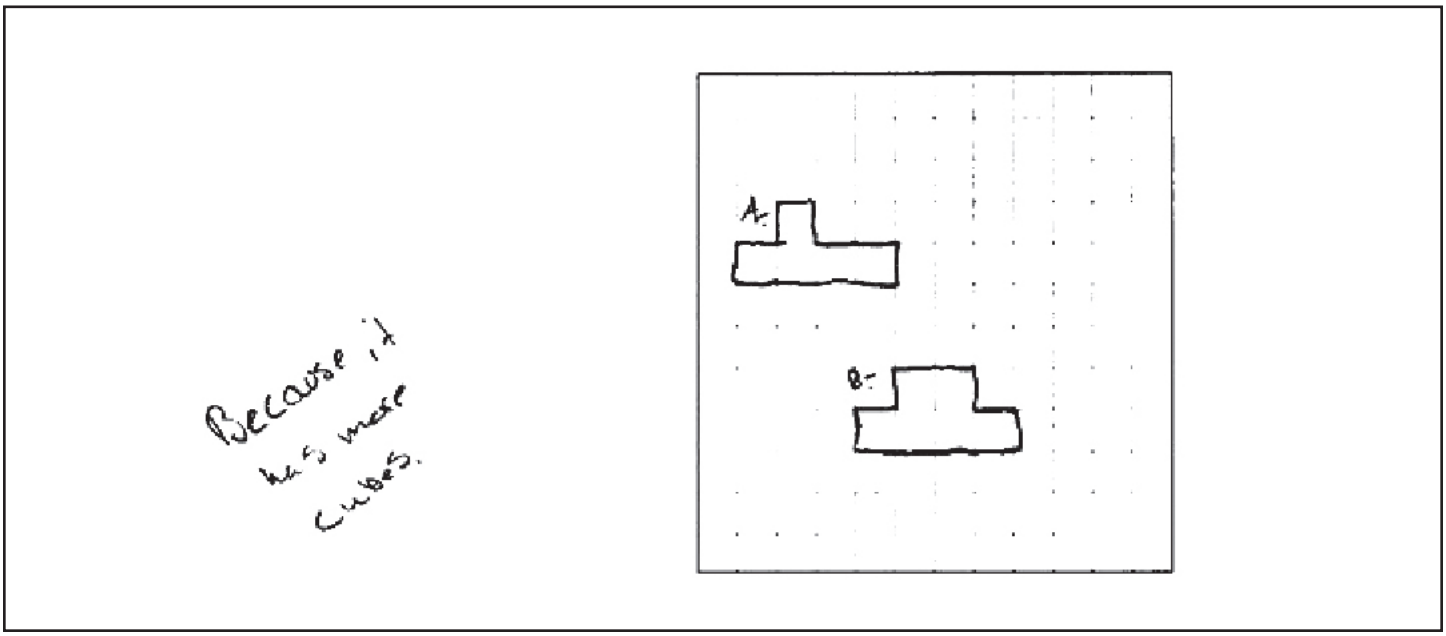
Sample 2

d.=It's not possible because, it has six and the other one has five, they both have different shapes. Don't have the same number of squares



Score Point 0

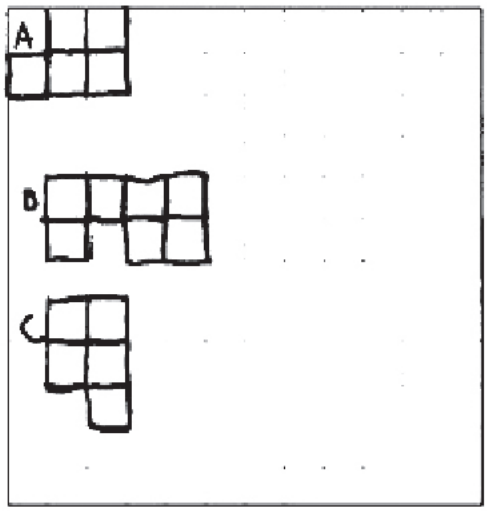
Sample 1



Score Point 0

Sample 2

Because their would be missing squares



Mathematics

Session 3 (No Calculator)

You may NOT use a calculator during this session.

68. Think of the meaning of the range, median, mean (average), and mode of a list of numbers.
    a. Make a list of five numbers that have a range of 10 and a median of 8.
    b. Make a list of five numbers that have a mode of 7 and a mean of 6.
    c. Make a list of five numbers that have a median of 4, a mode of 8, and a mean of 5.

Scoring Guide

Score	Description
4	7 points
3	5 or 6 points
2	3 or 4 points
1	1 or 2 points
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Scoring Notes

Part a: 2 points for making a list of numbers with a range of 10 and a median of 8
OR
1 point for making a list of numbers with either a range of 10 or a median of 8

Part b: 2 points for making a list of numbers with a mode of 7 and a mean of 6
OR
1 point for making a list of numbers with either a mode of 7 or a mean of 6

Part c: 3 points for making a list with a median of 4, a mode of 8, and a mean of 5
OR
2 points for making a list that meets 2 of the 3 requirements
OR
1 point for making a list that meets 1 of the 3 requirements

Sample Responses:

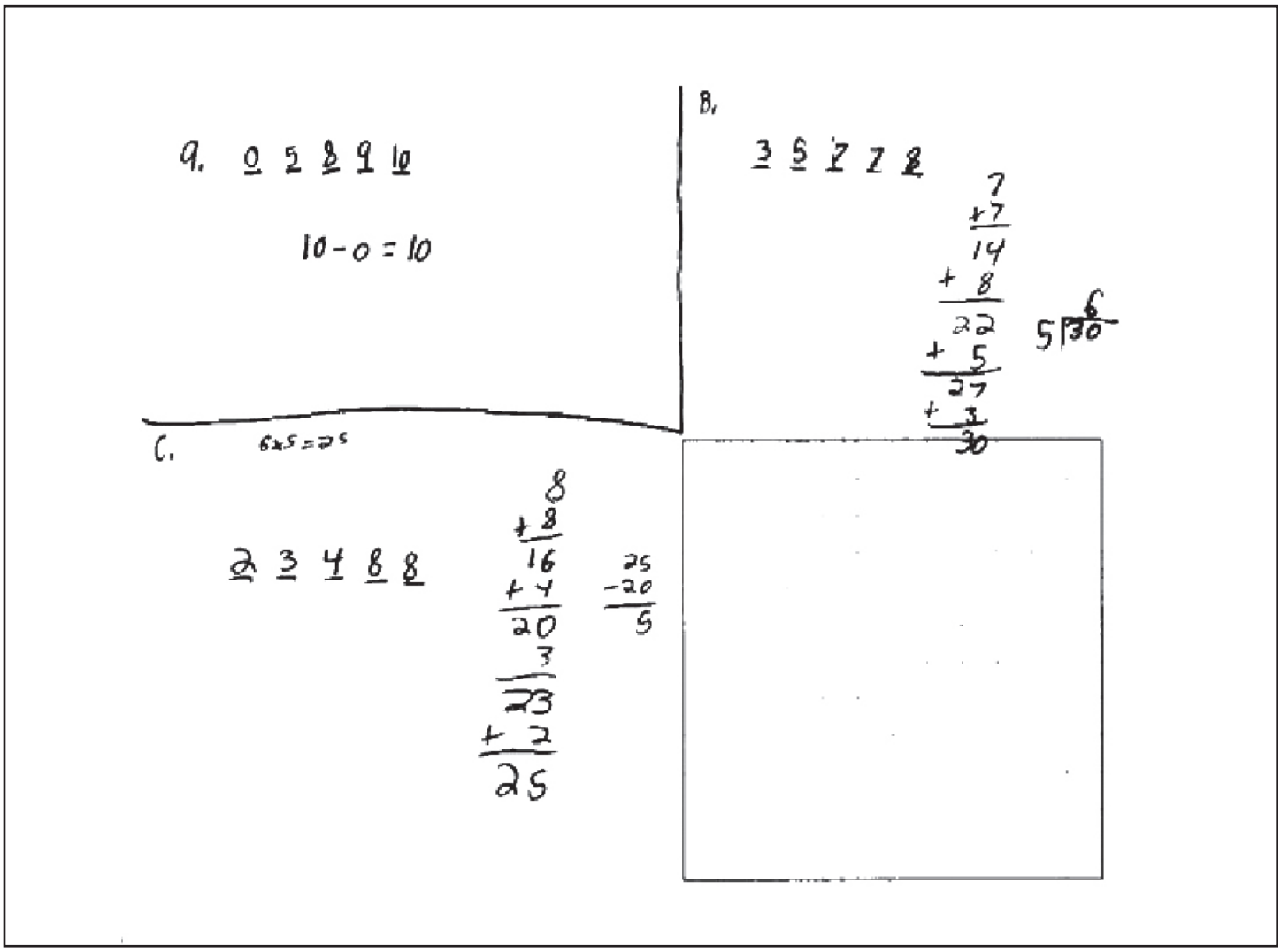
Part a: Accept any correct answer. One example is: 0 1 8 9 10

Part b: Accept any correct answer. One example is: 4 5 7 7 7

Part c: Accept any correct answer. One example is : 2 3 4 8 8

Score Point 4

Sample 1



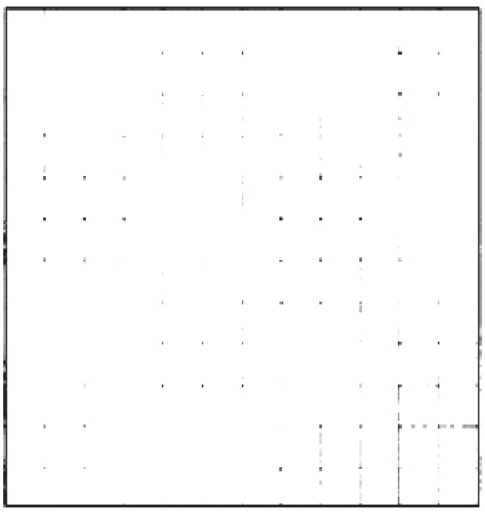
Score Point 4

Sample 2

a. 1, 2, 8, 10, 11

b. 2, 7, 7, 7, 7

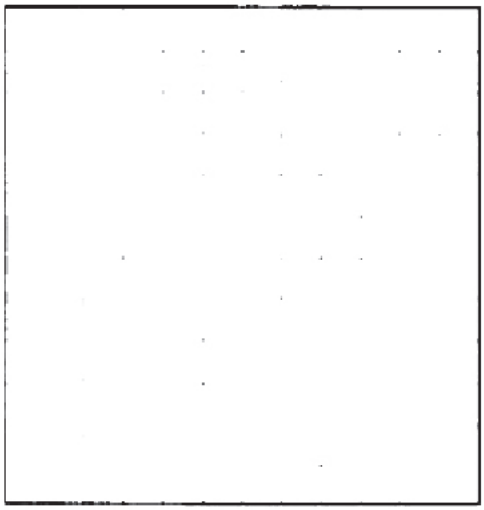
c. 2, 3, 4, 8, 8



Score Point 3

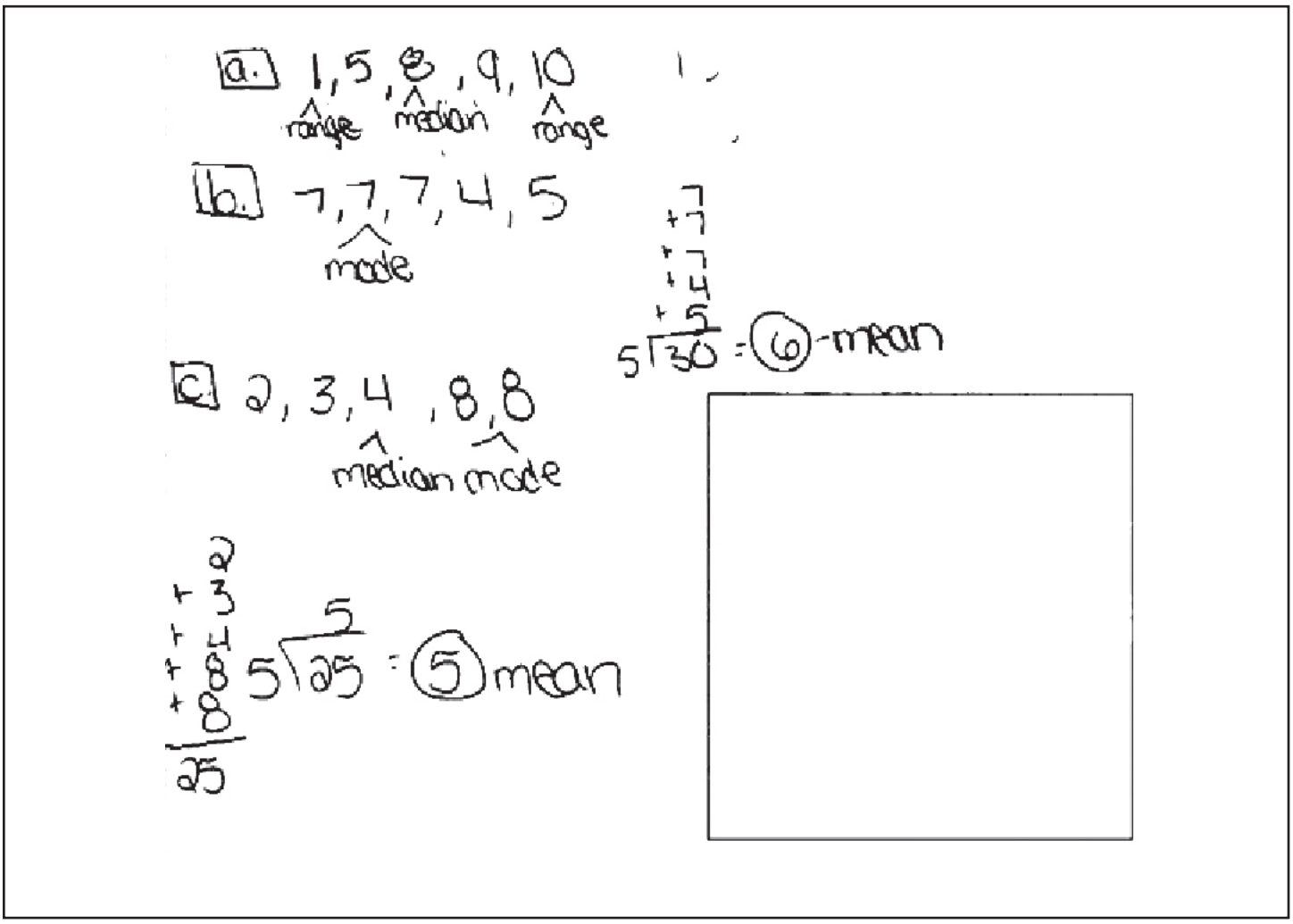
Sample 1

A. 67891D
B. 77664
C. 34288



Score Point 3

Sample 2



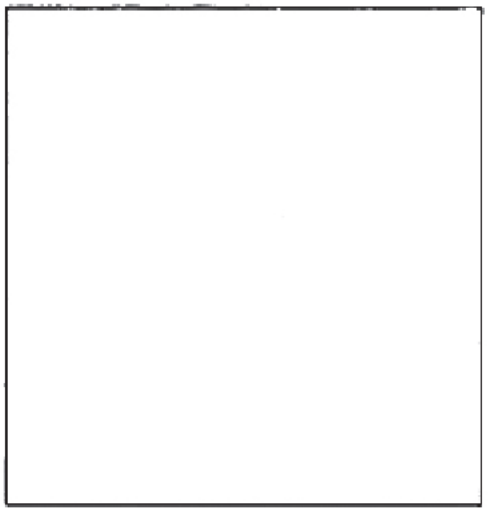
Score Point 2

Sample 1

a.

b. 777323

c. 84238



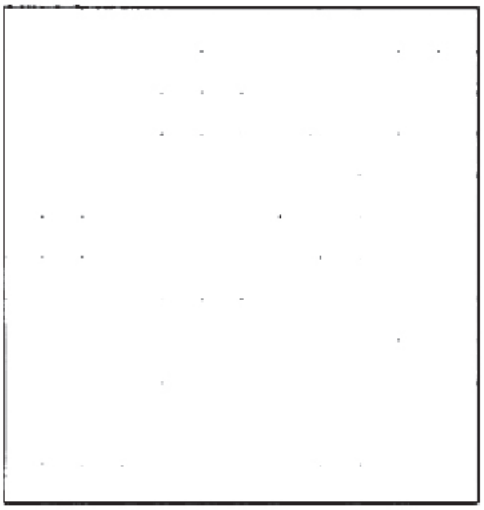
Score Point 2

Sample 2

a) 6, 7, 8, 9, 10

b) 5, 6, 7, 7, 7

c) 1, 2, 4, 5, 8



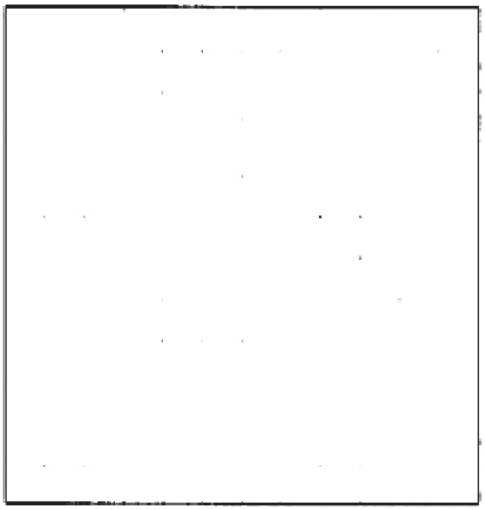
Score Point 1

Sample 1

a. 10, 8, 76, 16

b.

c.



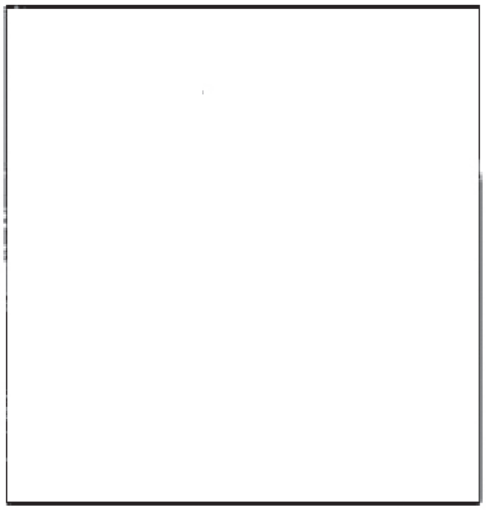
Score Point 1

Sample 2

(a) 5, 10, 8, 10, 4

(b) 7, 7, 4, 2, 4

(c) ✓ 8, 6, 4, 8, 4



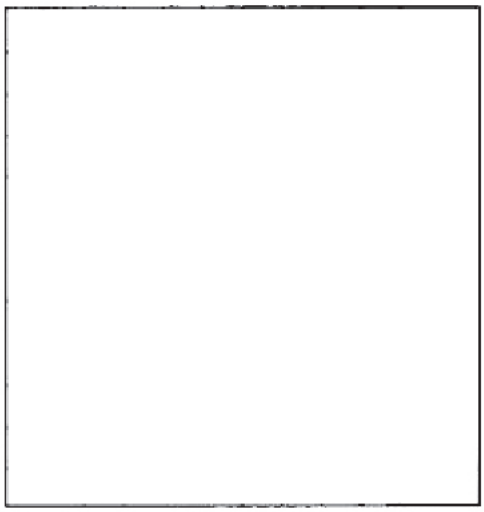
Score Point 0

Sample 1

A. 80, 10, 8, 16, 40

b. 42, 7, 6, 49, 48

C. 32, 4, 1, 40, 20



Score Point 0

Sample 2

a) 6, 5, 4, 7, 3

b) 8, 10, 9, 11, 15

c) 8, 16, 10, 64, 45